/333 cons./

Chapter 8

Agriculture

241 The Chiriguano, like the Guarani and the Chané, their ancestors, are excellent farmers, and the working of the soil represents their principal occupation and their great concern.
243 For them corn is of prime importance: it constitutes the basis
[273] of their diet, for it enters into the preparation of most of their dishes and in addition gives them their preferred drink, chicha or kãwi.

[32] The sandy lands of the western Chaco and its climate,
[34] hot and dry a great part of the year, but also rainy during the summer months, seem to be particularly suitable for this grain. I have never seen such beautiful fields of corn anywhere. The ears are large, well filled out /334/ with kernels, and extremely tasty. The Bolivian half-breeds and settlers who are coming in greater and greater numbers to take the place of the Indians devote themselves like them to the growing of corn, which, with cattle-raising, is their main resource.

114 My trip to the Chaco, which took place from the month
283 of February to the month of June, did not give me a chance to
[101] be present at the sowing which is done at the beginning of the rainy season. For many details I shall therefore be forced to
[229] refer to Conrado (pp. 42 and 44), Compeán (pp. 86-90), Boebmühlfld (2. pp. 181-184, and 10, pp. 23-24), to Nino (pp. 237-241), and Rosen (1. p. 210).

241 When a Chiriguano wishes to cultivate a new piece of
243 ground for himself and his family, he scours the environs of his village looking for a spot which may suit him and which is, in addition, easily irrigable. This condition is generally fulfilled by the lands at the foot of a hill or rising ground. The rain water which pours down there assures them of fertility.

/336 cong./

241 Before taking possession of a new plot of land the
[93] Chiriguano is always careful to make sure that there is no trace
293 of previous cultivation. Otherwise the former owner or his
[48] descendents would have the right to lodge a complaint against
him to the chief of the village.

[82] The Chiriguano makes known his new property right by planting any edible plant before the rainy season, for example, the large squash (gindaie-vaga) which spreads everywhere and is not smothered by the underbrush. He can equally well insure possession of the chosen terrain by knocking down the underbrush all around and making big gashes in the trees (1).

[71] 1. Compare this manner of insuring property rights with the method observed by the Coxinawa /Cashinawa/ in the same circumstances: "I saw (an Indian is speaking) rising ground which is suitable for a planting. I am going to make a planting for this summer. I broke many branches on this hill to mark this excellent place. No one can make his clearing on this hill. This hill is excellent; do not go there to make your planting." (Abreu, p. 69.)

241 In the middle of the dry season, say, in August, the
293 Indian, with a long stick sharp on both sides, fells the underbrush which encumbers his future field and sets fire to it. This operation has the further advantage of fertilizing the soil, thanks to the bed of ashes, which is a rather good fertilizer.

The cultivated fields are usually cleaned up after the harvest.
[234] The domestic animals, who feed there with little expense, are first let out there, and then the fields are set afire.

[221] Sowing takes place in the month of November when the first
[82] rainstorms have softened the soil. This time is announced by the appearance of the Pleiades (ilhu) above the horizon early in the morning.

/334 cont./

241 The Chiriguano who is getting ready to sow takes care
243 to hoe his field and to rid it of all weeds. For this he uses
/335/ a shovel, which I shall describe, in part from Campana
243 (p. 98), not having seen this instrument whole.

241 The shovels (sipe of the Chiriguano, even not so long
419 ago, were entirely of wood, preferably wood of the urundei
[824] (Astronium urundeuva F. Allemao) or of the palm siripá. Although narrower and longer, they resembled those of our bakers. The edges were straight, almost parallel, and only the cutting edge was slightly rounded at the sides. Toward the top they ended in a point, a
[824] kind of embryonic handle, which was lengthened by a stick to which it was attached with ties made of churqui (Nilotica farnesiana), of lianas, or toborochi fibers. The two shovels examined by Campana measured 70 centimeters in length and 15 in width; one of them, however, was less wide at the top than at the bottom by several centimeters (Fig. ?).

Fig. ?. Shovel (sipe) made of wood, without its handle, formerly in use among the Chiriguano (from Campana, Pl. VIII, Fig. 1).

If the Chiriguano have abandoned the ancient wooden shovel, they have nevertheless faithfully kept the long handle to which it was attached and which permitted them to work the soil without having to bend over. A remark of psychological order becomes necessary in this regard. The Chiriguano
[439] could well have acquired in the Syrians' stores, where they are available, shovels already provided with handles and ready to use. If they felt the need to modify the handle and to give it the traditional form, it is because it did not correspond to the movements and position of the body and hands which an age-old tradition had ingrained.

In each human group all manual labor requires certain set gestures to which, to a certain extent, the tools are adapted. This explains the variations these exhibit from country to country and even from tribe to tribe. With regard to this, Professor

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Mosny used to cite to us the following example: during the great war the French soldiers did not much like using English shovels different from their own, and vice versa. The Chiriguano I have seen laboring on military roads in Bolivia handle our shovels exactly like any European laborer; but back home, when it is a question of working a field, they return immediately to the ancestral gestures and are constrained to adapt the form of their instruments to them.

The handle fits into a handgrip carved out of a small block of wood and set in with the greatest care. The latter generally takes the shape of a crescent on which the hand rests comfortably. The handgrips with an elegant curve, which gave an aesthetic character to the ancient spades, have become very rare. In the course of /336/ my trip I was able to acquire only two shovel handles which were provided with them. One comes from Ibopeyti (Fig. 3) and the other was made for me by an old Indian of the Ivu mission. The workmanship of this latter specimen is careless, but it reproduces fairly faithfully the ancient models (Fig. 4).

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The use of the shovel among the Chiriguano probably dates back only three or four centuries. This instrument was unknown in ancient Paraguay where our Indians came from. The borrowing which could be presumed a priori has been confirmed by the discovery in the Quebrada de Humahuaca of wooden shovels similar in every detail to the ones I

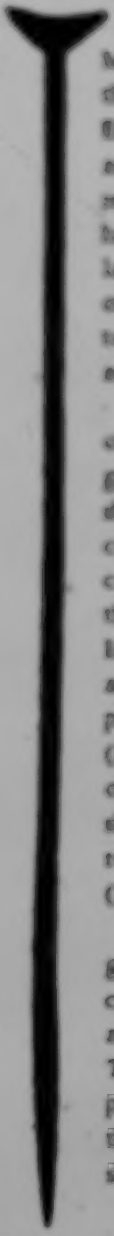

Fig. 3. Shovel handle. Prov.: Ibopeyti. (1/11 nat. size.)

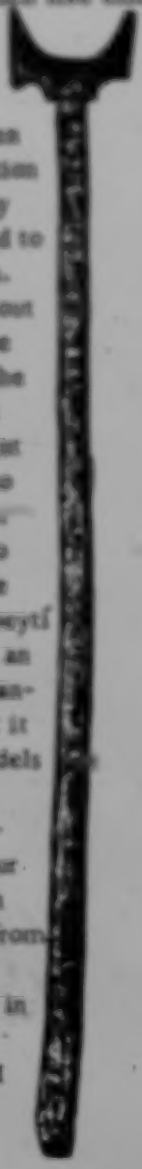

Fig. 4. Shovel handle. Prov.: Ivu. (1/8 nat. size.)

/336 cont./

241 412 172 243 have described here. These finds were made in the ruins of the Alfarcito and of the Pukará de Tilcara (Debenedetti, 4, Fig. 17 and p. 32) and at the Huerta in the same Quebrada de Humahuaca. Numerous wooden shovels have been dug up at La Paya (Ambrosetti, 6, Figs. 236-237, pp. 457-458), and Ambrosetti supposes with justification that they were hafted like those of the modern Chiriguano. Debenedetti (1, p. 35) obtained a specimen of this instrument at Kipón in Salta province.

[171] This type of shovel is particularly well represented in the archeological material of the Chilean coast. Numerous specimens have been found in Calama, Chiuchiu, and Pica in Tarapaca province (Boman, 2, Vol. II, pp. 731-732 and Plate LXVIII a; and Uhle, 3, pp. 15-16 and Plate I).

[171] The half-breeds and Indians of the Bolivian altiplano still work the earth today with a spade which in no way differs from that of their ancestors; moreover, it shows great similarity /337/ to the wooden shovel of the ancient Chiriguano (Chervin, p. 216, Fig. 120).

241 412 171 243 Nordenskiöld (9, pp. 30-32), studying the distribution of this cultural element, established that it was peculiar to the Andean zone and the adjoining regions. The Chiriguano shovel nonetheless has a characteristic feature for which we should look in vain on all the specimens found inside the boundaries of the Inca Empire: this is the crescent-shaped handgrip. It corresponds quite precisely to the crutches terminating the oars in use among the tribes of Brazil, Paraguay, and the Guianas and on which the paddler puts his hand flat.

241 412 174 243 The Chiriguano formerly lived in a region rich in rivers and streams, and they probably made use of paddles of this type to go up or down them. Once settled at the foot of the Andes, the resemblance between their former /Fig. 5 appears here/ oars and the shovels they saw in the hands of the Chané or the Chicha must have struck them; and they naturally sought to adapt to the new instruments this detail of structure whose convenience paddling had shown them. Such a hypothesis is not too adventuresome, for do we not have in the Chaco some shovels which have exactly the appearance of oars? (On this subject see the Ashluslay shovel published by Nordenskiöld, 9, p. 30, Fig. 1.)

/337 cont./

243 [476] [534] Once their fields are free of weeds, the Chiriguano call together relatives and friends. On the date agreed upon, all go to the fields early in the morning, after waking each other up with shouts, whistles, and by blowing into cow horns, which for them take the place of horns (in Chiriguano: waka-ranti) (Fig. 5), each trying to outdo the other. [622] In olden days the village chief used to take part in the sowing and watched to make sure that all helped one another.

[534] [321] Fig. 5. Cow horn (waka-ranti) which the Chiriguano use for a horn. The end is carved into a mouthpiece. Prov.: Iboyeyti. (1/5 nat. size.)

Sowing is done in a very simple way. If the ground is soft, the Indian sticks his shovel vertically into the soil, after giving two or three thrusts in order to push it in as far as possible. He enlarges the slit by pushing his shovel forward without drawing it out and slips two or three kernels of corn into the opening. Without changing position he makes two or three similar holes on his right and left, takes a step forward and begins again. The plants thus grow in a certain alignment /338/ which is far from perfect. Since several work at [461] a time, the job is done quickly. At noon, or about two o'clock [293] in the afternoon at the latest, they have finished their task and go back to the village where the chicha or kāwi, which the owner of the field has had prepared for his helpers, awaits them

/338 cont./

243 476 178 The sad state of decline in which the Chiriguano are at present has put an end to collective work, and it is only rarely that sowing is done in common. Each one must provide for his needs without any assistance other than that of his near relatives.

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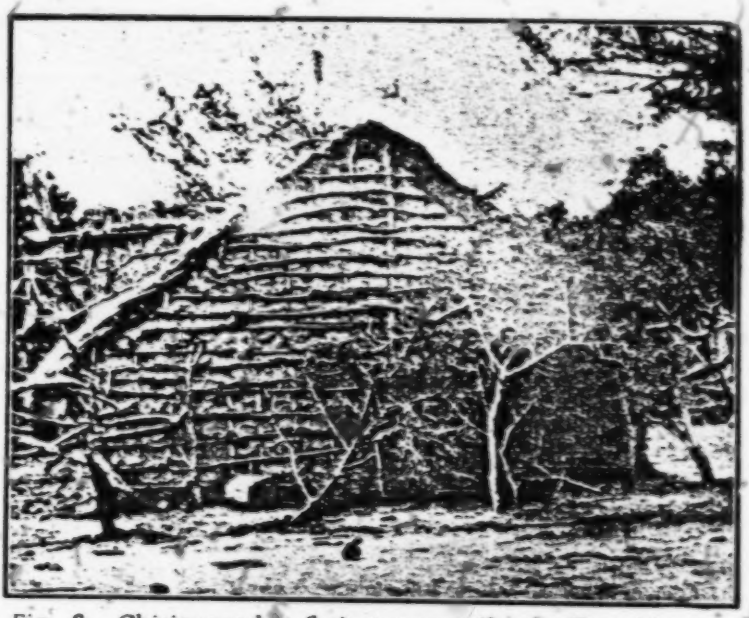

Fig. 6. Chiriguano hut (ho), temporarily abandoned by its inhabitants, who have gone to work in the fields. Caipipendí. (Photo. A. M.)

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The Chiriguano cultivate the following plants:
Corn (avati): 11 varieties;
Beans (kumanda): 11 varieties;
Squash (andai and grindaka-wasu): 5 varieties;
Sweet potatoes (yeti): 6 varieties;
Yucca or sweet manioc (mandio) (Manihot utilisima Pohl);
Groundnuts (manduvi);
Pimento /peppers/ (kii) (Capsicum), very rarely cultivated;

/339 cont./
consumption was limited (1).

1. Father Giannechini (Diccionario Chiriguano-Espagnol, etc., pp. 169-170) gives us very interesting details on this topic. Formerly, says he, tobacco was reserved for magicians and adults. He states that even today where its use is most widespread it is cultivated on only a very small scale. The Chiriguano do not have the patience to let it ripen and dry it over the fire in order to be able to smoke it.

When they were called to a sick person, the medicine men used to put themselves in a trance by smoking ever so much. By this means they discovered the author of the illness and gave him battle.

We shall see farther along (p. 76) the role of tobacco in the magical ceremonies intended to make rain fall.

At harvest time I visited the lands cultivated by the Indians of the Caruruti region in Caipipendi valley. From the end of February to the month of April, the Indians rarely spend the day at home. Most of the time they go to settle down in their fields, leaving the village as soon as the corn begins to ripen, not to return until the /340/ end of the harvest. The house of the absentees is made safe from all foreign intrusion by thorn hedges which they raise all around or only in front of the door. The latter can also be closed by a cot or bedstead, which they put up against it and anchor solidly (Fig. 6). ↕

This temporary migration of the whole population of a village to the fields sometimes made my job as a collector rather difficult. It /Fig. 7 appears here/ often happened that I found myself in nearly empty villages. The rare Indians who had remained there refused obstinately, and rightly, to sell me the objects which interested me, if they belonged to an absent person.

↕ [Fig 6 appears on p. 69--Analyst]

/341 cont./

243 825 532 Parrots are veritable plagues for agriculture in the Chaco and cause great damage. In order to fight their voracious bands the Chiriguano make scarecrows by attaching to the tip of flexible poles the masks they wear during the carnival festivities and which they have no use for afterward (Fig. 8). It is the need to be constantly /342/ on the watch to repulse the intrusion of these formidable bands of plunderers which obliges the Indians to come and live in their fields as soon as the corn ripens. The children and young people have the task of frightening off by their shouts these insatiable marauders. As soon as they see or hear a flock of parrots, they emit a long modulation which, it seems, has the effect of scaring them. If 243 411 the parrots come too near or perch on the fields, the Indians make them flee by bombarding them with stones with their slings. They have two kinds of these. Wherever the Chiriguano [179] are in direct contact with the Quichua /Quechua/, these slings are of wool (Plate VII, 1 and 2); elsewhere, especially in the Caipipendí valley, they are of vegetable fibers and made according to the net technique (Plate VII, 3). No doubt the Chiriguano borrowed this weapon from the Andean populations. To be convinced of this it suffices to compare the slings of the Indians and half-breeds of the department of Tarija with that of the Chiriguano (Rosen, 1, Fig. 267, p. 261).

[825] Another means of scattering the birds is to stretch a string above the fields. I do not know the effect that this measure can have on them.

243 825 [351] The fields of the Chiriguano Indians are always surrounded by a high, thick hedge which protects them from animals, wandering cows and horses, which could get in and play havoc with them. Grasshoppers sometimes do them much harm. In the Caipipendí valley I saw a field in which they were swarming and which seemed to have been abandoned for this reason (1).

1. When grasshoppers are particularly numerous, the Chiriguano dig ditches which they make them go into and in which they bury them. (Diccionario Chiriguano-Español, etc., p. 83.)

/342 cont./

243 462 [482] Wives accompany their husbands to the fields. They spend the day there spinning, sewing, grilling ears of corn, or roasting manioc. In the evening, if they return to the village, the wife comes back bent under the weight of her añapoka, or carrying-net, full of ears of corn. Sometimes the men help [492] them. Those who have donkeys and horses use them as beasts of burden.

482 Transport of corn is done generally with the help of the carrying-net, but makeshifts let them do without it in case of necessity. The ears of corn are held together in bundles by means of leaves which encompass them and are suspended from a flexible switch bent in the shape of a figure eight. When the two loops are balanced, one can raise them by grasping them by the middle.

251 In the village the ears are either stored in granaries on piles, to which steps cut in a tree trunk (Fig. 9) lead, or kept in the hut where a special corner has been made into a compartment. A tree trunk tipped with a natural fork may serve /Plate VII appears here/ /343/ as a storage place for corn. The ears, tied into bundles, are piled between the two branches of the fork (Fig. 10).

243 789 Formerly, before their dreadful decline began, the Chiriguano had recourse to magical ceremonies to hasten the ripening of corn and to avoid drought or too great an abundance of rain. /Fig. 9 appears here./

When the sun threatened to burn the harvest, they had one or several medicine men come who were charged with bringing the recalcitrant clouds. Provided with a cigar, they went around the fields blowing the smoke in every direction (Diccionario Chiriguano-Español, etc., p. 167). The symbolism of this rite of homeopathic magic is clear: the smoke represents the clouds which the ipaye is to gather.

[526] [178] The game of mboto represents the survival of a magical ceremony having to do with the growth of corn and its maturing.

[Text Continues on P. 78]

344/

526 178 243 789 In the Chiriguano missions or in the villages of the Caipipendí valley one finds on the large village plaza /Fig. 10 appears here/ an abundance of onion-like objects made of leaves of corn folded together (Fig. 11). Children throw them to each other with the flat of the hand and try to catch them again before they fall to the ground. A hurried traveler would see in this

343 251

Fig. 9. Corncrib on piles (avatí6). Ivu. (Photo. A. M.)

526 178 243 789 game only an Indian form of our court tennis or a rudimentary tennis. Actually, this is certainly the present significance of this amusement. In olden days the meaning was not the same, as I learned in the Machareti mission. Only a few years ago mbotó was played only at the time when the corn was beginning to ripen. The children formed a circle and threw this kind of shuttlecock to one another. If by chance one of them let it fall through inadvertance or awkwardness, he left the place

/34[illegible] cont./

526 178 243 789 immediately, chased by his comrades who pulled his hair energetically. The awkward player who threw the ball in such a way that his partner could not catch it was in the same category as the one who let it fall, on condition, however, that his opposite number had not made the gesture of catching it. Once the corn was ripe, they stopped playing mbotó.

526 171 [179]

417 251 824 Fig. 10: Forked tree on which the Chiriguano pile corn inside their huts. This device may have given rise to the corncribs on piles.

The game of mbotó has a wide distribution in South America, but it is limited to the populations of the Amazonian basin and the Guianas. Doubtless the Chiriguano introduced it into the Chaco (Nordenskiöld, 9, p. 168).

526 789 243 This game without any doubt derives from a magical rite whose object was to promote the beneficial course of the sun and to oblige it to shine without interruption to make the corn ripen. The straw shuttlecock represents the sun. The period when this game is played and the meaning the Chiriguano attach to it make my hypothesis a very likely one. Preuss demonstrated that in all of Central America and even in North America the /345/ tennis game arose out of a magical operation intended to influence the sun.

Fig. 11. Straw shuttlecock (mbotó), accessory for the game of the same name. Prov.: Carurutí. (1/3 nat. size.)

/345 cont./

241 115 The Chiriguano are proud of the extent of their fields. "Captain" Karnapadyú made me walk over all of his, emphasizing its size and the abundance of its produce. Another Chiriguano, after taking me along across all of his plantations, without sparing me one plot of ground, told me as he was bringing me back, with an air at the same time proud and questioning: "Guapo yo" /I am enterprising/. I answered that he was indeed very "guapo." He seemed flattered and happy.

243 593 583 602 The father clears his daughter's field, which represents for her a kind of dowry. The son-in-law must then take care of it, do the sowing and reap the harvest (1). My guide Cipriano

[585]

1. Corrado (p. 155) states that young married couples live at the expense of their parents and that they do not cultivate any chacras nor build a house before having a child.

complained bitterly about his son-in-law, whose laziness had obliged him to harvest his daughter's corn himself.

Chapter III

Cooking and Food

Food Resources

433 224 178 I have eaten meat only very rarely in Chiriguano villages, and I have never had a chance to taste a piece of game. It is not that this latter has disappeared from the region, exterminated by man, but the Chiriguano do not take the trouble to pursue it. In former days they were enthusiastic hunters, like nearly all the Indians of tropical America. When they were expecting guests for a drinking feast, the men went out into the bush and during 15 to 20 days got a good supply of the flesh of the peccary, deer, nandu, pigeon, armadillo, [251] chuña /a wading bird/, and even parrot. To preserve it they dried it in the sun without salt (Nino, pp. 249-258).

/364 cont./

273 life of the individual or the community is associated with this beverage. The divine principle which kãwi has in it does not take away its secular character; and, while one gets drunk on it during the festivals, nothing prevents washing down meals with it at the time when the corn ripens. As a sign of
[594] hospitality every stranger is invited to empty a calabash full
[596] of it: and the compliments he addresses to the wife of his host fill his heart with pride.

527 The Indians always appreciated the liking I showed
273 /Plate XIV appears here/ /365/ for kãwi, and my old friend
[123] Karnapadyú did not fail to recall the big vats full to the brim to persuade one to return to celebrate Easter with them, or, if you like, the corn harvest, since these two dates coincide more or less. Such promises /Fig. 29 appears here/ could not remain without effect, and Karnapadyú was not at all surprised to see me arrive shortly before the festival.

The greatest animation prevailed in the village of Caruruti, formerly so calm. Men came and went, bending under enormous loads of wood. All the urns were lined up in front of the huts and buried to a third of their height (Plate XIV, 1).
527 For a long time big piles of corn had already been heaped up
273 in the village, which all, big and small, men and women,
243 /Fig. 30 appears here/ were actively engaged in husking.
[412] Some used their fingers, others knives or a pointed stick. Not
[413] one had thought of the so practical instrument used by their ancestors: a small wooden peg with a leather loop to put two fingers through. It is curious to note that such a simple object fell into disuse: an old man still sold me a specimen made of iron but a close copy, so to speak, of the wooden prototype, of which it reproduced the smallest details (Fig. 29).

273 Now the hardest work begins: the grinding of the kernels. Day and night the dry noise of the pestles crushing the corn
[461] resounds in the village. Often, to get the chore over more quickly, three women group around the same mortar and with surprising speed raise and pound their pestle without a single
[415] error in rhythm interrupting their laborious work. Once ground, the corn is sifted in an urumpesa or large-meshed sieve (Fig. 31). The rather coarse flour is poured into large urns filled with water.

1: Métraux--116 E-5 (1929) 930 SF10 Chiriguano SF10

413
243

Fig. 29. Iron peg with leather handle used for husking ears of corn. Chiriguano. Prov.: Saladito. (1/2 nat. size.)

412
824

Fig. 30. Chiriguano mortar (anguá) made of urundey wood (Astronium urundeuva Fr. Allemao), with its pestle. The lower, recessed part is buried in the ground. Prov.: Ivu. (1/15 nat. size.)

2:Métraux E-5 (1929) 1948 SF10 Chiriguano SF10
Chane SF8

The migrations, wars, and the religious conversion of the *Chiriguano* have been the subjects of many historical monographs. The most important of these are by Corrado (1884), Serrano y Sanz (1898), Dominguez (1918), Gandia (1929 a, and b), Métraux (1930 b), Coni (1925), Moreno (1929), and Finot (1939). The Jesuit missionary work among the *Chiriguano* has been described by Lozano (1941) and Muriel (1918).

CULTURE

SUBSISTENCE ACTIVITIES

As today *Chiriguano* and *Chané* share in the same culture, the following data may apply to both tribes.

Farming.—The *Chané*, conquered by the *Chiriguano*, were proficient farmers who, though practicing a tropical type of agriculture, were probably acquainted with many of the methods of cultivation of the Andean area. The *Chiriguano* adopted their traditions. The new habitat of the *Chiriguano* did not offer the same resources for hunting and fishing as had their homeland. Therefore, these Indians depend on farming to a larger extent than any other *Tupi-Guarani tribe*. The basis of their livelihood is maize, of which they have 11 varieties, all related to those of Paraguay. Then follow in order of importance: Pumpkins, beans (11 varieties), sweet potatoes, sweet manioc, peanuts, and some Barbary figs (*Opuntia* sp). Sweet potatoes were grown on a large scale by the *Chané* of the Parapeti River.

These Indians also raise cotton, tobacco, urucú, and, in the Parapeti region, reeds for arrow shafts (*Arundo donax*). Plants of the Old World adopted by the *Chiriguano* include melons, watermelons, oranges, sugarcane, and sorghum.

Chiriguano men clear the fields and surround them with a tall fence as a protection against the inroads of wild or domesticated animals, a task which is considered to be particularly strenuous. They also till the soil, but at harvest time they are assisted by the women and children. The latter, armed with slings, drive away the parakeets and other birds which prey on the crops. Nordenskiöld (1912, p. 183) observed that among the *Chané* of the Itiyuro region, large maize fields were tended by men while pumpkins and beans were raised by the women.

Collecting wild food.—When their crops fail, the *Chiriguano* subsist on the same species of pods and fruits as those collected by the Chaco Indians: Algarrobo, tusca, mistol, caraguatá, and other plant foods.

Hunting.—Hunting is a very secondary economic activity, at least in modern times. Peccaries, which are the main game animal, are hunted with specially trained dogs and killed with bows and arrows or with clubs. Rheas, which are abundant in the Chaco plains, are caught with bolas. Pigeons are captured with clap nets. Special arrows with two points are used for hunting yacu birds (*Penelope* sp.).

222 [957] /29 cont./ IT is hot, and some cute sickness, or inflammation of the eyes, with it. Nevertheless, one should not confuse this little plant with another similar one whose fruits lack flavor and which is called by the Chiriguano "Aguara quii," which is to say, literally, chili pepper, of the fox. The best way not to confuse it is to taste the fruit; it is found everywhere.

• 243 TRIGO /wheat/. -- The Eternal Creator of all things in his bounty and mercy arranged that this small plant, necessary in every aspect, should yield its fruit in every region inhabited by man; thus, in spite of the excessive heat, it is harvested here in abundance, and the farmer is not robbed of his hopes if he takes care to irrigate the field opportunely. Barley also flourishes in irrigated lands, but the cultivation of both has been abandoned for reasons already expounded in these pages and also because birds greatly bother both crops, as also happens in the rice paddies, which will be found empty if they are left to the discretion of our flying friends.

[824] [412] There also thrives together with maize, or in other places, the wheat called Guinea, or sweet sorghum, which the Chiriguano call "Tricu" and which is indigenous; it is sweet, matures with maize, and they suck it, as well as the panicled sorghum, which is a kind of sorghum /30/ without sweetness and used for making brooms for sweeping. The seed of both plants is liked by birds.

137 824 [262] VID /grapevine/. -- Farther on I have said that this plant pre-eminently required for the Sacrifice, like wheat, thrives quite vigorously in this region. I add here that in the woods there is a tree with small leaves and unimportant wood, which rises up to some eight meters above the ground and whose fruit is the size of an olive, has a dark coffee color and a flavor like that of the grape, matures in the month of February, is edible, and is called "Ivaviyu" in Chiriguano. Also in the wild state is the native grape with its twining trunk. Its fruits are like a bunch of grapes; they are white and some even black, and they are good for the manufacture of brandy.

/241 cont./

Modern Farming and Seeds

241 179 [407] Today planting with the spade is disappearing, and if this tool is necessary for weeding, an iron one has been substituted. The plow has become general, as have the yoke and oxen, and in the missions even boys of 12 break in oxen two and a half years old. They first do the planting for the mission, then for themselves and their fathers, and finally they help those who have no sons: the missionary provides them with young oxen, plowshares, and even halters when they are very poor.

The neophytes in most of the Potosí missions have learned to perfection this new method of farming, and they are so advanced that they are competitive with and even superior to many mestizo farmers. [868] [409] The older ones teach the younger ones, fathers teach their sons, and the latter as well as the former manufacture plow and yoke out of selected wood with [231] all the perfection that these implements require. It is satisfying to see upon a farm 40 or 50 yokes of oxen, directed and driven by young men and boys who yesterday were like 46 their grandparents! The whites themselves do their planting on a large scale, aided by these Chiriguano, who receive in exchange double daily wages (1).

> 1. A peon plowman is not obliged to bring oxen; it is the white who waits for him with the yoke hitched. If a peon brings his own, he earns up to triple daily wages, because they are worth exactly three strong peons, the two oxen and the man who drives them. Thus it is not much to pay him triple.

● 243 262 Today it seems to me that there must not be another country where the different types of maize thrive better. This is the principal element, the daily food, not only of the Chiriguano tribe, but of all those who inhabit most of Bolivia. Here in particular, when there is no harvest, its lack is greatly felt by whites and blacks, that is to say, by mestizos and by Chiriguano.

Schwedenschiffbd II-3/5(1908-1909, 1913) 1920
SF10 Chiriguano SF10
Chane SF8

shall see that the methods of fishing differ somewhat in the different rivers. At the Rio Pilcomayo the Indians must always have found a good supply of food. As many Chiriguano live by very insignificant streams they never have the opportunity of fishing. The Chané all live in places where they are able to procure fish during some part of the year at least.

Big game is scarce in the land of the Chiriguano and Chané. Nor are these Indians keen huntsmen. One seldom sees game that has been killed by them in their huts. The great flocks of fat pigeons that settle in their fields are for the most part left unmolested.

As we shall see in the following the Chiriguano and Chané live mostly by tilling the ground. Owing to the comparative dryness of their land maize is cultivated more than anything else. It is the ease with which this plant can be grown here, that makes the land of the Chiriguano and Chané a good land to dwell in.

The fruit of the carob-tree (algarrobo) is the most important wild fruit. Probably no careful study has ever been made of the climatic conditions of the Chiriguano and Chané country. It is situated in the tropics, north of the tropic of Capricorn and the traveller there of course suffers more from heat than cold. In May and June especially, however, when there is a strong south wind, it is agreeable to have a well built house, warm clothes and a snug bed. The rains begin in December and leave off in April or May. It sometimes happens that there is little or no rain and then the crops are a failure. They are often destroyed by grasshoppers.

S:Nordenskiöld E-5,4 (1908-1909, 1913) 1920
SF10 Chiriguano SF10
Chané SF8
South American Indians S3

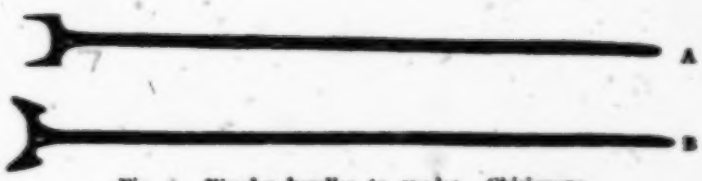

Fig. 5. Wooden handles to spades. Chiriguano.
1/12. A — Private collection. B — R. M. E. 680.

III.

Tillage and tillage implements.

Vegetable food is of great importance to the majority of Indians. This is most specially so with the Chiriguano and Chané. To the former, as well as to those of the latter tribe who dwell on the Rio Itiyuro, maize is of extraordinary importance. The Chiriguano and Chané belong to WISSLER's »maize-area» or »area of intensive agriculture». WISSLER divides S. America into three great food areas: area of intensive agriculture, manioc area, and guanaco area. Another division would be more correct, viz. —

1) Area of intensive agriculture.
2) Area of manioc and fishing.
3) Area of wild seeds and fishing. El Gran Chaco.
4) Guanaco area.

There will, of course, be in addition a number of small areas with special conditions of life, as in the extreme south of S. America.

The Chiriguano grow 11 kinds of maize[1]), 11 varieties of beans[1]), 12 kinds of calabashes[1]), of which 5 are edible, sweet potates, mandioca, sugar-cane, mani, urucu, tobacco,

[1]) According to NINO Pp. 241 ....

/154 cont./

One might be surprised that a person would want to live in this treeless valley, where one finds only salty, dirty water, but in the Caipipendi valley one need not drink water, for here the maize yields magnificent harvests and there is never a shortage of maize beer. The inhabitants of the Caipipendi valley are wealthy, and if there is famine in other regions, the Indians come from afar to these kinsmen, in order to barter their valuables for maize.

For the collector, too, it is a magnificent valley. We found silver ornaments, silver bowls, finely carved musical instruments, and many other rare articles in this ethnographer's paradise. Stone axes, ruins, diggings /Grabfelder/ of various peoples prove that the Caipipendi valley has long been highly prized by the Indians.

The water has cut deeply into this valley. In the rainy season it probably rains there too.

From Caipipendi I returned over the mountains, through a /155/ valley famous for its hot springs and its beauty, to Charagua, to continue then along the Andes in the direction of Santa Cruz de la Sierra.

It was October, 1908. Not quite a year later, in July, 1909, I again visited the Chaco, after extensive river journeys far beyond, on the border of Brazil. In another book I shall describe these journeys on large, navigable rivers and through virgin forests whose luxuriant green is overpowering.

From Santa Cruz de la Sierra I returned, as was said, to the Chaco in July, 1909. I then traveled first of all by way of the Rio Grande to the Rio Parapiti, chiefly to visit my friend Batirayu.

The Rio Grande is the southernmost tributary of the Amazon River. It comes from the highest mountains of the Andes and flows past Sucre, a city that has long contended with the city of La Paz for the rank of capital of Bolivia. When it emerges from the mountains, it is a roaring, mighty river. Farther down it has an extremely changeable, very little known course. North of Santa Cruz de la Sierra the Rio Grande receives the Rio

/160 cont./

The region settled by the Chiriguano and Chané Indians is really very extensive. It is varied in nature, from luxuriant virgin forests to extremely arid valleys and plains poor in vegetation. It is in part very mountainous, but the Chiriguano and Chané are not mountain people. They stay down in the valleys and do not climb up to the peaks and plateaus, like the Quichua Indians.

Animal life in these regions is poor, in fact, very poor. A hunting people could never live there. Now and then a roebuck, a wild pig, a few ostriches, that is all one sees in the way of big game. Bird life, too, is very poor. /161/ The number of lakes is very small, and they are no larger than what we would call pools in Europe. On the Rio Parapiti one sees quite a large number of white egrets (1), famous for

1. Ardea.

their valuable feathers. With regard to wood fowl, only the chicken called "pavas" (2) contributes to the diet. Occasionally

2. Penelope.

one sees a large-billed "toucan" (3). Sleek pigeons, fattened

3. Rhamphastus.

on maize, often live in masses in the fields of the Indians. In the Rio Pilcomayo there is a great abundance of fish, in the little rivers the fish are small and poor. The Indians who live in these regions have to be farmers, and they are maize farmers to the highest degree. For them maize is food, drink, pleasure, everything!

I have no adventures to report from among these Indians. Everyone may travel unharmed among them. The greatest sorrow of the ethnographer is that he is unable to collect all the interesting and old things that he sees there. One cannot take everything home.